Installation Manual

4 & 8 Channel MDVR

Live video streaming mobile DVR

fleetminder

Contents

1 Specifications

1.1 Product overview

Hard Disk Mobile DVR (Automotive) is a cost-effective, multi-functional device designed for video surveillance and remote monitoring of your mobile assets.　It uses a high-speed processor, an embedded **Linux** platform, and the most advanced technologies, such as **H.264** Video Compression/Decompression, **3G** network transmission technology and **GPS** positioning technologies. MDVR can utilise four/eight channel video recording. Each channel supports CIF, HD1 and D1 image solution. Drivers' driving information, GPS data and alarm data is recorded on **hard disk** which is used as the storage device. The MDVR provides powerful auto black box features, installation flexibility and high reliability.

1.2 Key features:

4/8 channel video & audio synchronous real-time recording and playback

4ch D1@25fps , 8ch CIF@25fps , 8ch HD1@25fps , 8ch D1@12fps options.

Internal 2.5 inch HDD. Supports max 1TB with professional hard disk damping technology.

3G network , such as HSUPA/HSDPA/WCDMA/EVDO is selectable.

Built-in GPS module.

Built-in G-sensor

WIFI 802.11g b/g/n interface.

Built-in 1 SD card for backup recording when HDD errors.

2 high speed USB2.0 interfaces, the front is used to export the record file. The back is used for mirror recording.

8 digital alarm inputs, 2 digital level output.

Three RS485 interfaces, one RS232 interface.

Built-in hard disk heat protection allowing operating environments from -40℃ - +85℃

Power supply: 8V-36V

1.3 Detailed specifications

Table 1 : MDVR Specifications

Items	Parameters	Specifications
System	Language	English
	Operation Menu	Graphical User interface（OSD menu）
	Password	Users Password/ Administrator Password
Video	Video input	4-CH video input 1.0Vp-p，75Ω
	Video output	1-CH composite video output 1.0Vp-p，75Ω 1 VGA output
	Video Display	1 channel or synchronous 4 channels

	Video Signal	PAL, NTSC
	Video Compression	H.264 Main profile PAL:100fps at D1, NTSC: 120fps at D1
Audio	Audio input	4-ch Audio input
	Audio output	1-ch Audio output
	Recording mode	Audio & Video sync Recording
Image Processing & Storage	Image Resolution	4 D1 ，4 HD1，4 CIF options
	Video Compression	H.264 Main profile
	Video bit rate	CIF: 1536Kbps ~ 128Kbps，4 levels optional. Highest: 0 level Lowest: 3 level HD1: 2048Kbps ~ 512Kbps，4 levels optional. Highest: 0 level Lowest: 3 level D1: 4Mbps ~ 1Mbps，4 levels optional. Highest: 0 level Lowest: 3 level
	Audio Compression	ADPCM, G.726, G.711 Options
	Audio Bit rate	8KB/s
	Storage	Support One HDD Max 1TB Support One SD Card Backup when HDD is error. Support Mirror Recording with a expand HDD
Alarm	Alarm input	8 digital level inputs，below 4V is low level alarm，above 4V are high level alarm
	Alarm output	2 digital level outputs，output voltage level:12V
Communication Interface	RS485 Interface	Support 2-RS485 interface
	RS232 Interface	Support 1-RS232 interface
	WIFI Interface	Support 802.11b/g/n
Extended interface	Support connecting LCD control panel via extended interface	
Audio amplifier interface	Support Stereo Audio output, it can drive a 20W speaker directly	
3G	HSUPA/HSDPA/WCDMA/EVDO Optional	
GPS	Built-in GPS module. The geographic coordinates and the vehicle speed can be recorded to the hard disk and also can be transmitted to the CMS.	
Acceleration	Embedded acceleration sensor	

Sensor		
Software	Playback	Playback Software is used to playback video file, GPS track, G-sensor, and alarm information.
	CMS	Center vehicle management software platform, it can manage 20,000 devices at same time. Additional server(s) are required for more devices.
Software Upgrade	Supports Flash disk firmware updates	

1.4 Electrical specifications

Table 2: MDVR Electrical Specifications

Items	Parameters	Specifications
Power input	+8-+36V	＋8V～＋36V, When long-term under 8V, or long-term over 36V, will enter auto power off (protected mode).
Power output	12V	12V（+/-0.2V），Max:3A.
ACC Detection	≤4V	Power OFF
	≥5V	Power ON
Video input Impedance	75Ω	75Ω for each video input impedance
Video output Volt	2Vp-p	Output 2Vp-p CVBS analog signal, displayer device input need 75Ω impedance to fit it。
I/O interface	0—4V	Low level alarm
	4V	High level alarm
Operating Temp	-40℃-75℃	In a well-ventilated environment.

2 Device Applications

This product can be used for video surveillance and remote monitoring for regular or special vehicles such as buses, logistic vehicles, trucks, long-distance coaches, taxis, tankers, cars, school buses, police cars, patrol cars etc.

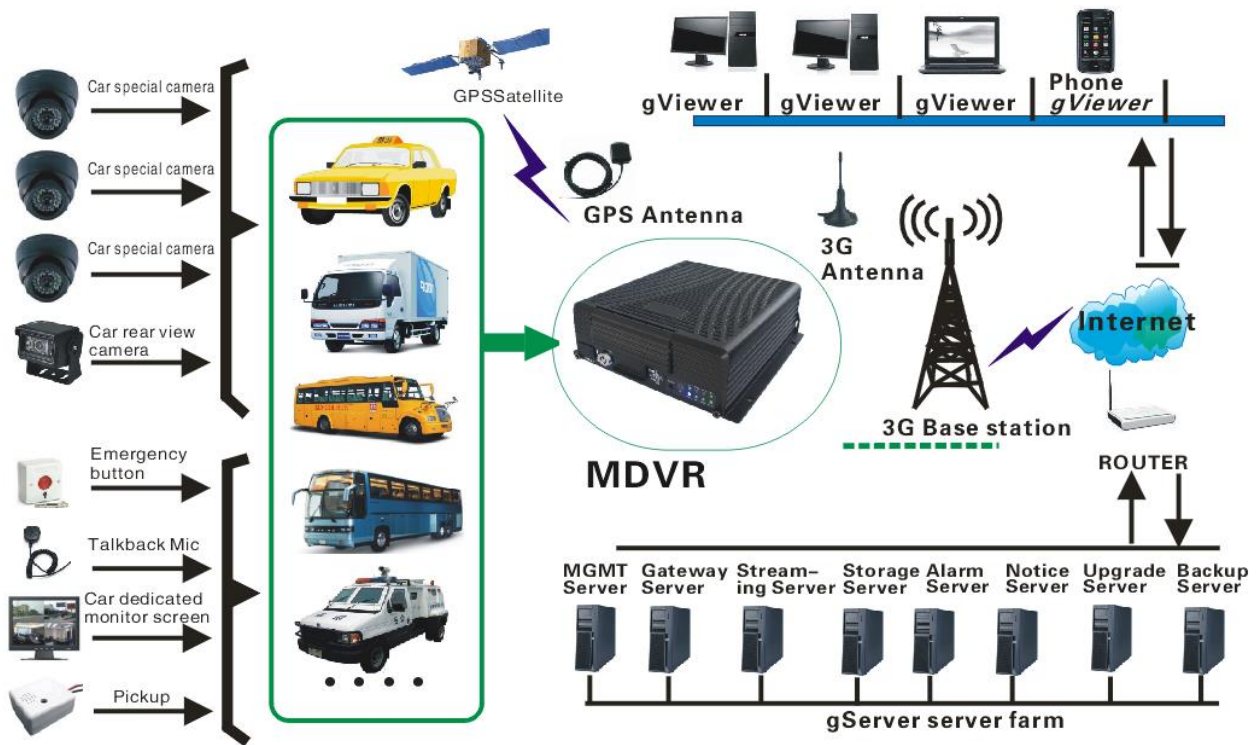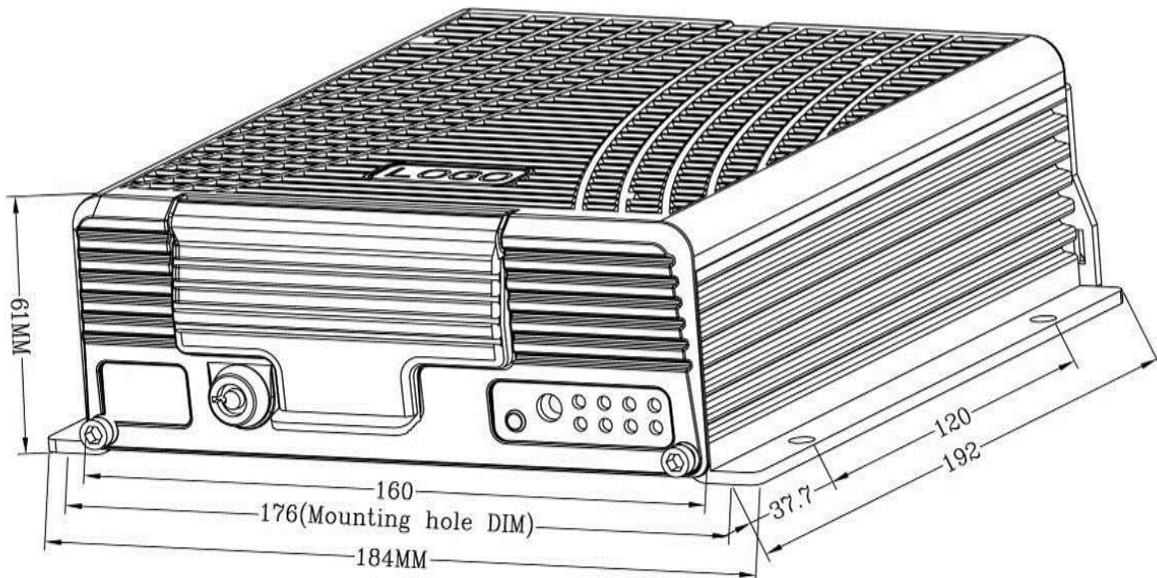The MDVR products application connection diagram:

Figure 1-1
MDVR Schematic diagram

3 Installation

3.1 Front view image

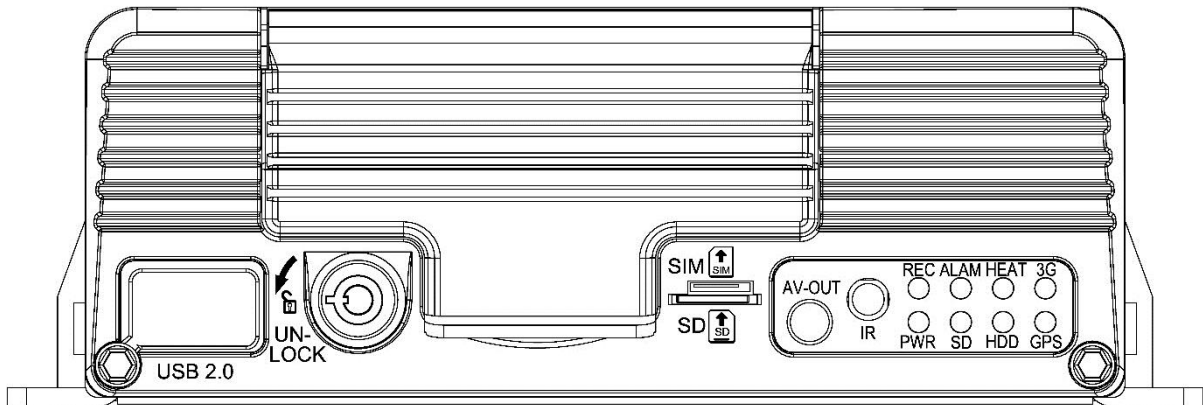## 3.2 Device dimensions and mounting holes

3.3 Front panel

Table 3 : Front Panel definition

Interface	Items	Description
Video out	AV-OUT	Video Audio and 12V out analog output
LED	REC	Recording LED. Light on when recording
	ALAM	Alarm LED. Light on when the alarm function has been enabled
	HEAT	Light on when in hard drive heating mode
	3G	Light on when 3G module installed and working
	PWR	Power LED
	SD	Light on if SD card is installed
	HDD	Light on if HDD is installed, flashing when recording
	GPS	GPS signal LED. Light on when GPS module installed and working.
IR receiver	IR	Receive remote control signal
Electronic key	LOCK	When locked the MDVR device will power on. When unlocked the device will shut down and allow the removal of the hard drive, SD card and SIM card.
USB Port	USB 2.0	For firmware upgrades and configuration, as well as allowing copying of video data.

3.4 Back panel
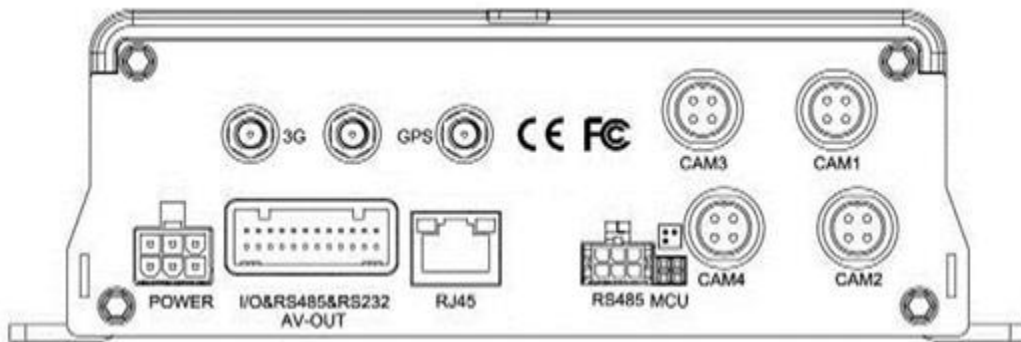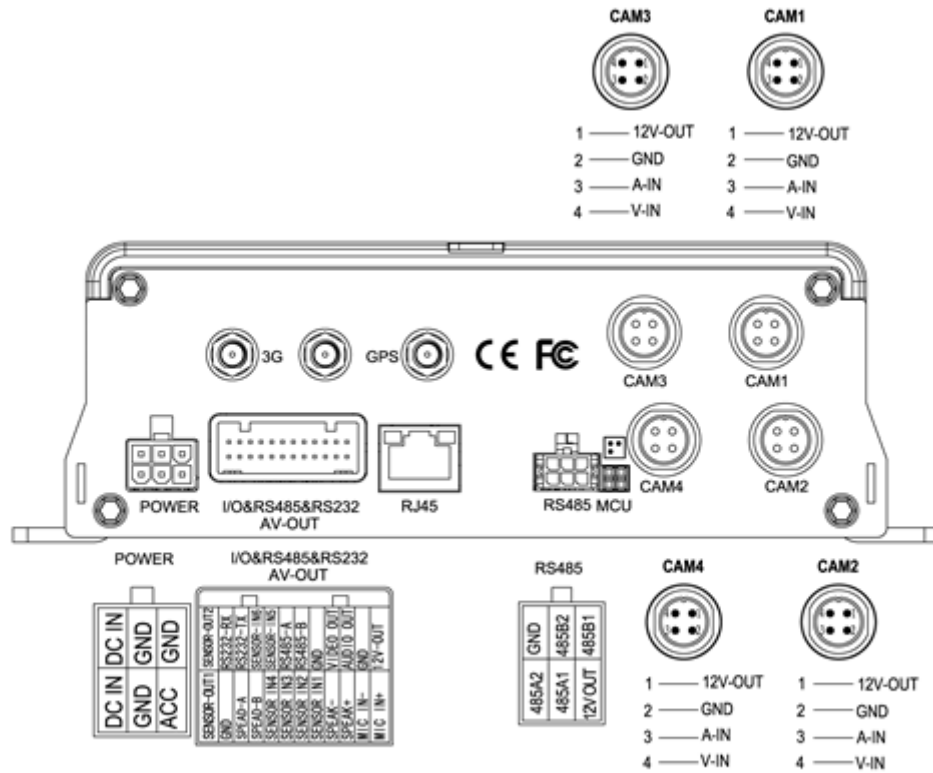

4 channel MDVR back
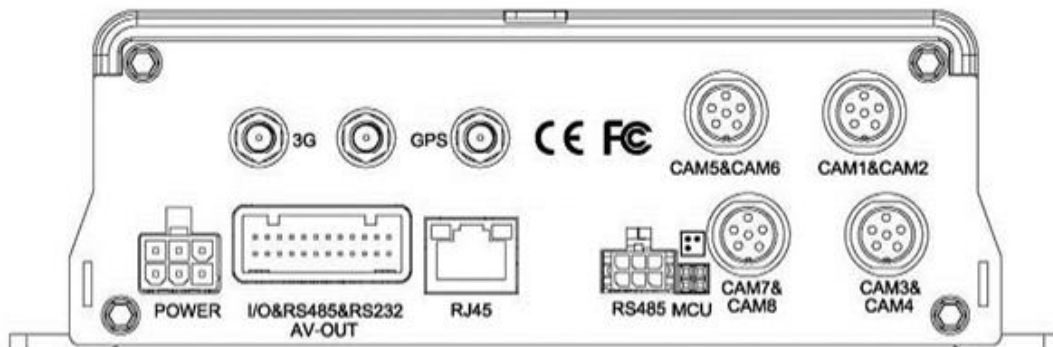
8 channel MDVR back

Table 4: Back panel interface definition table

| Interface	Connector	Description
3G Antenna Interface	3G	3G Antenna Interface
Wifi Antenna Interface	Wifi	Wifi Antenna Interface
GPS Antenna Interface	GPS	GPS Antenna Interface
Power Input Interface	POWER	Power input interface
I/O Serial AV-out interface and speaker	I/O & RS485 & RS232 AV-OUT	Switch input interface，high level（>4V）input vehicle speed pulse signal , differential input voice docking function
Network Interface	RJ45	Insert network cable. The LED will light on when network is connected successfully
Serial Interface	RS485	2 RS485 interface
Printer Interface	MCU/ICP	System debugging information interface
AV-IN (4 channel)	CAM 1.2.3.4	Video & audio input and 12V out
AV-IN (8 channel)	CAM 1.2.3.4.5.6.7.8	Video & audio input and 12V out

3.5 Box contents

After unpacking, please check the device for damage. If there is contact the fleetminder office. Cross check this list with the device and its accompanying accessories.

Table 5:　Box contents

Mobile DVR　Packing List			
Item	Specifications	Unit	QTY
MDVR device		pcs	1
Accessories Box		pcs	1
Power Line-6PIN	6PIN Big557　L=200mm	pcs	1
Alarm Line-24PIN	AMP24PIN ，　L=200mm	pcs	1
Remote Control		pcs	1
HDD Case		pcs	1
Connecting Line	4PIN　Air　connector,　RCA/BNC converter, DC　L=200mm	pcs	4（According to demand）
Electronic Key		pcs	2
Desiccant		pcs	1
Pearl Cotton		pcs	2
GPS Antenna	G503 L=5m	pcs	1
3G　Antenna	3G Antenna	pcs	1
Wifi Antenna	Wifi Antenna	pcs	1
Protective cover		pcs	1
Screw M3	KM3*5mm	pcs	4
US-made screws # 8	AC #8*9MM	pcs	1
Allen wrench	3#	pcs	1

3.6 Power cable
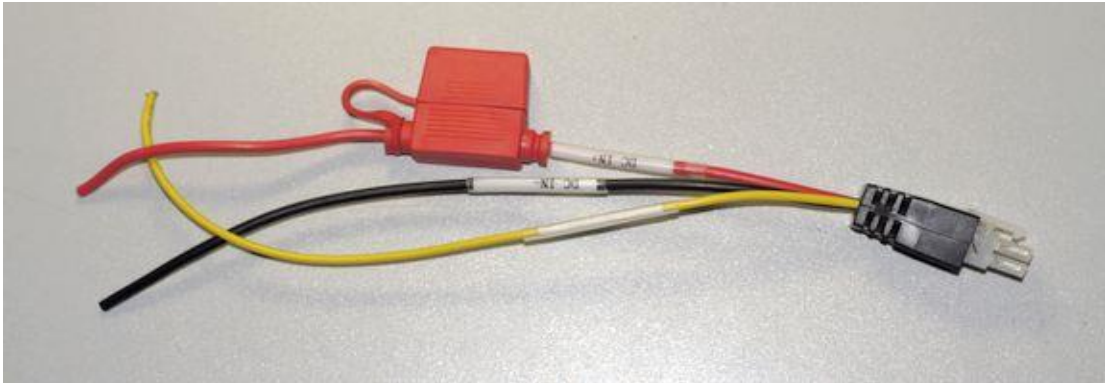
One end is a 6pin white plug, it connects with the 6pin white socket on the MDVR device back panel. The red and black cables are directly connected to the vehicle's battery. Red cable to positive, black cable to negative. Yellow cable is connected to the ignition. The device will automatically start when the vehicle's ignition is switched on, and turned off* when the ignition is off (*delayed shutdown feature - depending upon the configuration settings the MDVR can be programmed to remain on for up to 180 minutes).

Notes:

1）Before connecting, confirm the power voltage is between 8V—36V otherwise the MDVR device will not function.

2）Ensure that the power cables are insulated to prevent short circuiting.

3）Power connection must be made directly to the battery. Do not use the bond strap for grounding as it will produce negative pulses that can interfere with the device's normal operation.

4）The yellow cable must be connected to the vehicle ignition, otherwise the device will not be able to execute the delayed shutdown and the final moment of the video will be lost;

3.7 Antennas

**GPS antenna**

Wifi antenna


3G antenna

3.8 Alarm input and output

The device has 8 alarm input and 2 alarm output interfaces. Alarm input detection is level detection. Various states of alarm level can be detected while the vehicle is in motion, such as braking, steering horn etc. Below is a diagram that shows when the braking pedal is depressed, the MDVR would be able to detect the high level, otherwise, just detect the low level.
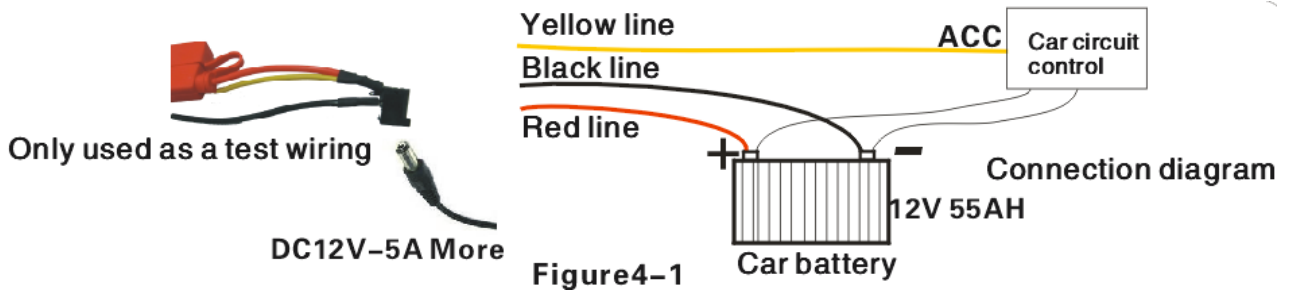
Alarm outputs are level output drive capability for the 200mA. If you want to drive a power device that requires more than 200mA, then you must connect an external relay. Shown below is the Alarm output photoelectric alarm wiring diagram.
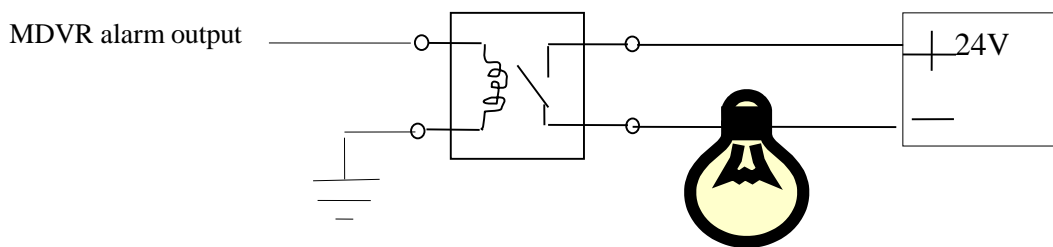
3.9 Camera adapter cables
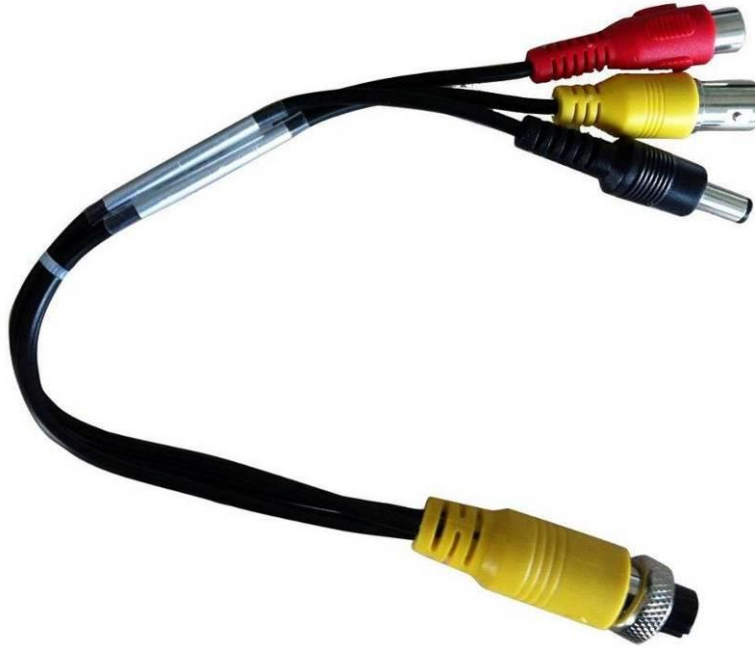
4 Pin converter BNC composite video cable

8 channel wiring cable, A is the first camera, B is the second
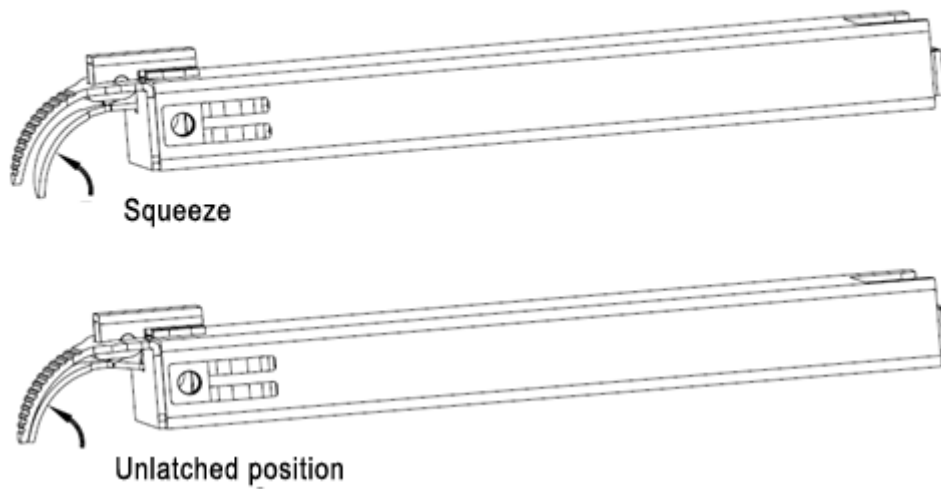
3.10 HDD, SIM card, SD card installation

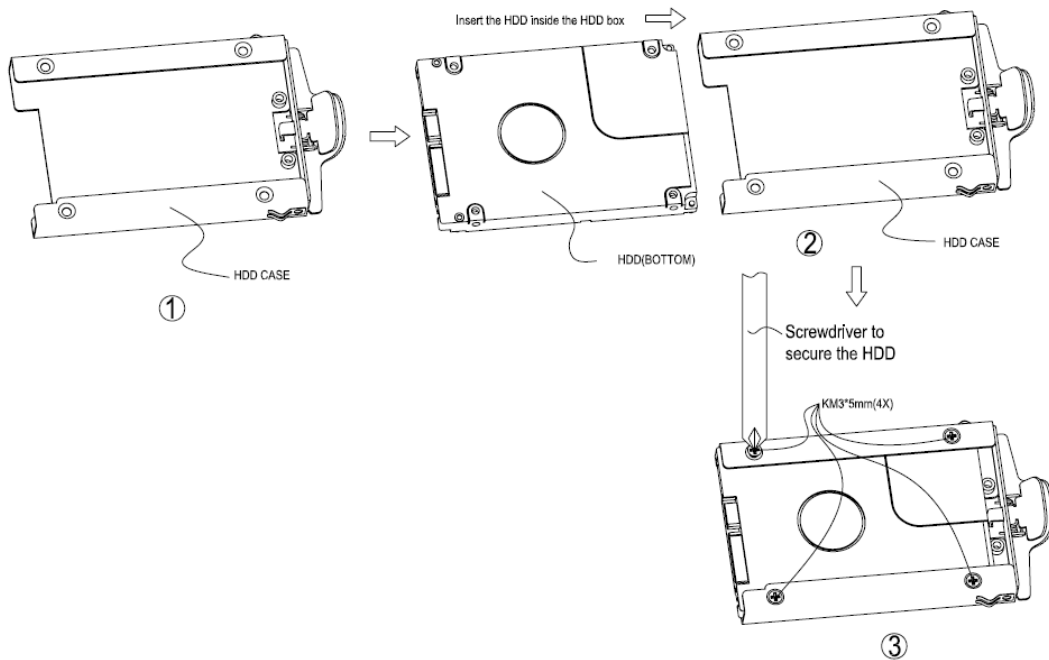Unlock the MDVR with the key, insert the HDD box (with the installed hard drive) into the hard drive slot.
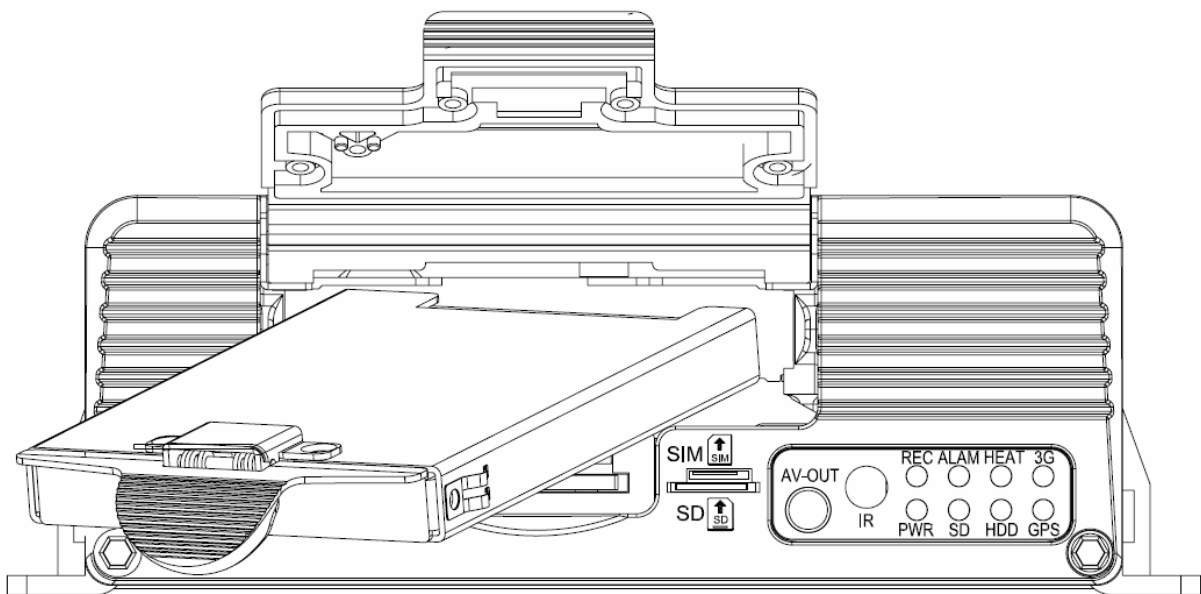
INSERT / REMOVE THE HDD BOX

## To remove the hard drive box, squeeze the lever to unlatch

Squeeze

Unlatched position

**Squeeze the latch lever and pull to remove
the hard drive box from the MDVR device**

Insert the HDD inside the HDD box

HDD CASE

①

HDD(BOTTOM)

②

HDD CASE

Screwdriver to
secure the HDD

KM3*5mm(4X)

③

Mount the hard drive into the hard drive box
(if replacing the drive. Pre-installed by fleetminder)

SIM card removal / installation

The SIM card slot is located on the communication board accessed from the front of the MDVR device. Push to insert the SIM card. Also push to remove.
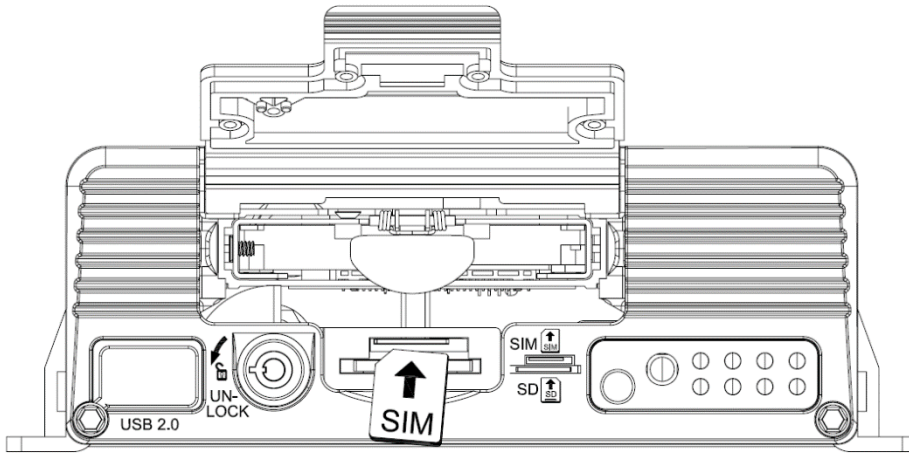
SD card removal/installation

The SD card slot is located on the communication board accessed from the front of the MDVR device. Push to insert the SD card. Also push to remove.

3.11 Recommended installation hardware

ITEM		NAME	
Power wire and ignition yellow wire		Accessory wires	
Self-tapping screws or bolts		Insulating electrical tape	
Cable ties		Flame retardant corrugated pipe	 (optional)